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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/560,967	12/16/2005	Shousei Yoshida	M1909.1139	1666

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EXAMINER	
AKBAR, MUHAMMAD A	
ART UNIT	PAPER NUMBER
2618	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	02/08/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/560,967	YOSHIDA, SHOUSEI	
	Examiner	Art Unit	
	Muhammad Akbar	2618	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 December 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-8* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-8* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *16 December 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☒ Certified copies of the priority documents have been received in Application No. JP2003-182701.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *12/16/2005*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. The factual inquiries set forth in Graham v. John Deere Co., 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. Claim(s) 1-3 and 5-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tanaka et al (U.S. Patent No. 6,493,379 B1) and in view of Miyoshi (U.S. Patent No. 6,959,169)

Regarding claim1, Tanaka discloses an adaptive antenna reception method, in which the directional beam of an array antenna (71-0 to 71(m-1) of fig.7) consisting of a plurality of antenna elements (#0 to #(m-11) of fig.7) is adaptively formed to receive a desired signal (i.e. signal coming from antenna) and reduces (i.e. suppress) interference

signals, multiplexed (78 of fig.8) signals transmitted from a plurality of senders, and the desired signal is corrected based on transmission channel estimation (fig.7,col.1 lines8-29), the method comprising: the first step of adaptively calculate the antenna weight coefficient (a0-a3 of fig.5) according to signals(z0 to z3 of fig.5) received by the respective antenna elements and an error signal (signal has a interference parameters) obtained from the desired signal corrected (calculated by weight coefficient unit 55 of fig.5) based on the receiver channel feedback information (i.e. transmission channel estimation)(see fig,1-7 col.8 lines 38-48); the second step of performing the constraint process for the antenna weight obtained in the first step to maintain the beam gain constant in the arrival direction estimate unit (6 of fig.4) based on the cross correlation function of the estimate of the desired signal (col.4 lines 48-61); the third step of receiving the desired signal through the array antenna using the antenna weight which has undergone the constraint process in the second step (see fig.1,); and the fourth step of estimating the transmission channel (at the channel receiver unit for transmission) of the desired signal received in the third step to correct the desired signal based on the estimation result (see fig.1-7.col.10,lines 10-34). But failed to disclose updating the antenna weight ;and error signal obtained from the desired signal based on transmission channel estimation. However, Miyoshi teaches weight control section calculates a weight based on receive signal from each radio reception section and updated the antenna weight; and error signal obtained from the desired signal based on transmission channel estimation (see fig.1, abstract,col.6 lines4-20)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the adaptive antenna weight calculation based on the signal received by the respective antenna elements (as taught by Tanaka) by adaptively updating antenna weight calculation based on error signal technique (as taught by Miyoshi) to enhance performance as system uses instant update information for estimating the channel estimation.

Regarding claim 2, as discussed above with respect to claim 1,Tanaka further discloses the adaptive antenna reception wherein constraint process is performed for the antenna weight using a cross correlation function that indicate direction (i.e. direction vector) that indicates the arrival direction of the desired signal (col.10 lines19-26).

Regarding claim 3, as discussed above with respect to claim 1and 2 and Tanaka furthermore discloses obtaining a correlation value between signals received by the respective adjacent antenna elements and calculating the average of the correlation values ;and arrival angle (phase) obtained from the correlation function which can be used for calculating a direction based on the arrival angle(col.9 lines 1-66).

Regarding claim 5, Tanaka discloses an adaptive antenna reception in which adaptively form the directional beam (beam former 77 of fig.7) of an array antenna (71-0 to 71(m-1) of fig.7) consisting of a plurality of antenna elements (#0 to #(m-11) of

fig.7) is adaptively formed to receive a desired signal (i.e. signal coming from antenna) and reduces (i.e. suppress) interference signals, multiplexed (78 of fig.8) signals transmitted from a plurality of senders, and the desired signal is corrected based on transmission channel estimation (fig.7,col.1 lines8-29) comprising: calculate the antenna weight coefficient (a0-a3 of fig.5) according to signals(z0 to z3 of fig.5) received by the respective antenna elements and an error signal (signal has a interference parameters) obtained from the desired signal corrected (calculated by weight coefficient unit 55 of fig.5) based on the receiver channel feedback information (i.e. transmission channel estimation)(see fig,1-7 col.8 lines 38-48);performing the constraint process for the antenna weight to maintain the beam gain constant in the arrival direction estimate unit (6 of fig.4) based on the cross correlation function of the estimate of the desired signal (col.4 lines 48-61); receiving the desired signal through the array antenna using the antenna weight which has undergone the constraint process(see fig.1,); and estimating the transmission channel (at the channel receiver unit for transmission) of the desired signal received based on the estimation result (see fig.1-7.col.10,lines 10-34). But failed to disclose updating the antenna weight; and error signal obtained from the desired signal based on transmission channel estimation. However, Miyoshi teaches weight control section calculates a weight based on receive signal from each radio reception section and updated the antenna weight; and error signal obtained from the desired signal based on transmission channel estimation (see fig.1,abstract,col.6 lines4-20)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the adaptive antenna weight calculation based on the signal received by the respective antenna elements (as taught by Tanaka) by adaptively updating antenna weight calculation based on error signal technique (as taught by Miyoshi) to enhance performance as system uses instant update information for estimating the channel estimation.

Regarding claim 6, as discussed above with respect to claim 5,Tanaka further discloses the adaptive antenna reception wherein constraint process is performed for the antenna weight using a (cross correlation function that indicate direction (i.e. direction vector) that indicates the arrival direction of the desired signal (col.10 lines19-26).

Regarding claim 7,as discussed above with respect to claim 5 and 6 and Tanaka furthermore discloses obtaining a correlation value between signals received by the respective adjacent antenna elements and calculating the average of the correlation values ;and arrival angle (phase) obtained from the correlation function which can be used for calculating a direction based on the arrival angle(col.9 lines 1-66).

4. Claim(s) 4 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tanaka as modified by Miyoshi as applied to claim 1 and 5 above and further in view of Kobayakawa et al (U.S. Patent No. 6,064,338).

Regarding claim 4 and 8, Tanaka discloses in combination with Miyoshi with respect to claim 1 a adaptive antenna reception at least one path and estimating transmission channel of the desired signal except to generate a multipath combined demodulation signal. However, Kobayakawa teaches to generate a multipath (MP1 to MP n of fig.3) for adding (combined) demodulation signal (see fig.3 col.8 lines9-31).

Therefore, it would have been obvious to of ordinary skill in the art at the time the invention was made an antenna weight calculation based on the signal received by the respective antenna elements (as taught by Tanaka) by adaptively updating antenna weight calculation based on error signal technique (as taught by Miyoshi) to generate multipath for adding demodulation signal (as taught by Kobayakawa) to get higher efficient channel estimation and AAA compatible system.

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure (7.96)

The following patent are cited to further show the state of the art with respect to clips and bookmarks in general:

U.S. Patent No. 6,141,567 to Youssefmir et al teaches apparatus and method for beamforming ina changing interface environment.

U.S. Patent No. 6,018,643 to Golemon et al teaches apparatus and method for adaptive forming an antenna beam pattern in a wireless communication system.

U.S. PG. Pub. 2002/0045432 A1 to Yoshida teaches adaptive antenna reception apparatus.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Muhammad Akbar whose telephone number is (571)-270-1218. The examiner can normally be reached on Monday- Thursday (7:30 A.M.-5:00P.M).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edan Orgad can be reached on 571-272-7884. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

MA

EDAN ORGAD
PRIMARY PATENT EXAMINER

2/4/07